1		43	Rolling
1	POWDER METALLURGY PROCESSES WITH	44	.Pretreatment of consolidated
0	HEATING OR SINTERING	44	powders
2	.Making porous product	45	.Sintering which includes a
3	.Making articles of indefinite	13	chemical reaction
4	length	46	.Alloying occurs during sintering
4	Filaments or fibers	47	.Liquid phase sintering
5	.Making composite or hollow	48	.Heat and pressure simultaneously
_	article	40	to effect sintering
6	Powder next to powder	49	Hot isostatic pressing (HIP)
7	One or more components not	50	Hot rolling
•	compacted	51	Multiaxial (Not HIP)
8	Powder next to solid	52	Heating by electrical means
9	Powder not compacted	32	other than radiant energy
10	.Metal and nonmetal in final	53	
	product	33	.Plural heating steps including sintering
11	Nonmetal is elemental carbon	54	Different temperatures
12	Boride containing	55	Additional operation between
13	Nitride containing	33	heating steps
14	Carbide containing	Г.С	3 1
15	Complex or multiple carbides	56 57	.Special medium during sintering
16	With another binary nonmetal	57	Special atmosphere
17	Single carbide	58	Hydrogen or hydrogen plus
18	Tungsten carbide		nitrogen (Nitrogen per se in
19	Oxide containing	59	57)
20	Rare earth oxide	59	Hydrocarbon or derivative
21	Silver metal with metal oxide	60	(e.g., CH4, etc.)
22	Copper oxide		Vacuum
23	.Powder shape or size	61	FORMING ARTICLES BY UNITING
	characteristics		RANDOMLY ASSOCIATED METAL PARTICLES
24	Filaments or fibers	62	_
25	.Controlled cooling after	63	.Powder pretreatmentIncludes a chemical reaction
	sintering	64	
26	.Post sintering operation	65	Includes coating of particles
27	Impregnation	0.5	
28			Includes adding a binder
20	Subsequent working	66	material
29		66	material .Consolidation of powders
	Subsequent working	67	<pre>material .Consolidation of powdersExtrusion</pre>
	<ul><li>Subsequent working</li><li>Subsequent heat treatment</li><li>(e.g., annealing, etc.)</li><li>.Powder pretreatment (prior to</li></ul>	67 68	<pre>material .Consolidation of powdersExtrusionIsostatic/Hydrostatic pressing</pre>
29	<ul><li>Subsequent working</li><li>Subsequent heat treatment</li><li>(e.g., annealing, etc.)</li></ul>	67	<pre>material .Consolidation of powdersExtrusion</pre>
<ul><li>29</li><li>30</li><li>31</li></ul>	<ul><li>Subsequent working</li><li>Subsequent heat treatment</li><li>(e.g., annealing, etc.)</li><li>.Powder pretreatment (prior to</li></ul>	67 68	<pre>material .Consolidation of powdersExtrusionIsostatic/Hydrostatic pressing</pre>
29 30	<ul><li>Subsequent working</li><li>Subsequent heat treatment</li><li>(e.g., annealing, etc.)</li><li>.Powder pretreatment (prior to consolidation or sintering)</li></ul>	67 68	<pre>material .Consolidation of powdersExtrusionIsostatic/Hydrostatic pressing</pre>
<ul><li>29</li><li>30</li><li>31</li></ul>	<ul><li>Subsequent working</li><li>Subsequent heat treatment   (e.g., annealing, etc.)</li><li>.Powder pretreatment (prior to   consolidation or sintering)</li><li>Heat treatment of powder</li></ul>	67 68 69	<pre>material .Consolidation of powdersExtrusionIsostatic/Hydrostatic pressingRolling</pre>
<ul><li>29</li><li>30</li><li>31</li><li>32</li></ul>	<ul> <li>Subsequent working</li> <li>Subsequent heat treatment    (e.g., annealing, etc.)</li> <li>.Powder pretreatment (prior to    consolidation or sintering)</li> <li>Heat treatment of powder</li> <li>Mechanical blending</li> </ul>	67 68 69	<pre>material .Consolidation of powdersExtrusionIsostatic/Hydrostatic pressing</pre>
<ul><li>29</li><li>30</li><li>31</li><li>32</li><li>33</li></ul>	Subsequent workingSubsequent heat treatment   (e.g., annealing, etc.) .Powder pretreatment (prior to   consolidation or sintering)Heat treatment of powderMechanical blendingComminuting	67 68 69 <b>FOREIGN</b>	material .Consolidation of powdersExtrusionIsostatic/Hydrostatic pressingRolling  ART COLLECTIONS
<ul><li>29</li><li>30</li><li>31</li><li>32</li><li>33</li><li>34</li></ul>	Subsequent workingSubsequent heat treatment   (e.g., annealing, etc.) .Powder pretreatment (prior to   consolidation or sintering)Heat treatment of powderMechanical blendingComminutingChemical blending	67 68 69	<pre>material .Consolidation of powdersExtrusionIsostatic/Hydrostatic pressingRolling</pre>
<ul> <li>30</li> <li>31</li> <li>32</li> <li>33</li> <li>34</li> <li>35</li> </ul>	Subsequent workingSubsequent heat treatment   (e.g., annealing, etc.) .Powder pretreatment (prior to   consolidation or sintering)Heat treatment of powderMechanical blendingComminutingChemical blendingCoating	67 68 69 <b>FOREIGN</b>	material .Consolidation of powdersExtrusionIsostatic/Hydrostatic pressingRolling  ART COLLECTIONS
<ul> <li>30</li> <li>31</li> <li>32</li> <li>33</li> <li>34</li> <li>35</li> <li>36</li> </ul>	Subsequent workingSubsequent heat treatment   (e.g., annealing, etc.) .Powder pretreatment (prior to   consolidation or sintering)Heat treatment of powderMechanical blendingComminutingChemical blendingCoatingAddition of fugitive material	67 68 69 <b>FOREIGN</b>	material .Consolidation of powdersExtrusionIsostatic/Hydrostatic pressingRolling  ART COLLECTIONS
29 30 31 32 33 34 35 36 37	Subsequent workingSubsequent heat treatment   (e.g., annealing, etc.) .Powder pretreatment (prior to   consolidation or sintering)Heat treatment of powderMechanical blendingComminutingChemical blendingCoatingAddition of fugitive materialAdditional material is solid	67 68 69 <b>FOREIGN</b>	material .Consolidation of powdersExtrusionIsostatic/Hydrostatic pressingRolling  ART COLLECTIONS
29 30 31 32 33 34 35 36 37	Subsequent workingSubsequent heat treatment   (e.g., annealing, etc.) .Powder pretreatment (prior to   consolidation or sintering)Heat treatment of powderMechanical blendingComminutingChemical blendingCoatingAddition of fugitive materialAdditional material is solid .Consolidation of powder prior to	67 68 69 <b>FOREIGN</b>	material .Consolidation of powdersExtrusionIsostatic/Hydrostatic pressingRolling  ART COLLECTIONS
29 30 31 32 33 34 35 36 37 38	Subsequent workingSubsequent heat treatment   (e.g., annealing, etc.) .Powder pretreatment (prior to   consolidation or sintering)Heat treatment of powderMechanical blendingComminutingChemical blendingCoatingAddition of fugitive materialAdditional material is solid .Consolidation of powder prior to   sintering	67 68 69 <b>FOREIGN</b>	material .Consolidation of powdersExtrusionIsostatic/Hydrostatic pressingRolling  ART COLLECTIONS
29 30 31 32 33 34 35 36 37 38	Subsequent workingSubsequent heat treatment   (e.g., annealing, etc.) .Powder pretreatment (prior to   consolidation or sintering)Heat treatment of powderMechanical blendingComminutingChemical blendingCoatingAddition of fugitive materialAdditional material is solid .Consolidation of powder prior to   sinteringSpecific pressure or lack or	67 68 69 <b>FOREIGN</b>	material .Consolidation of powdersExtrusionIsostatic/Hydrostatic pressingRolling  ART COLLECTIONS
29 30 31 32 33 34 35 36 37 38	Subsequent workingSubsequent heat treatment   (e.g., annealing, etc.) .Powder pretreatment (prior to   consolidation or sintering)Heat treatment of powderMechanical blendingComminutingChemical blendingCoatingAddition of fugitive materialAdditional material is solid .Consolidation of powder prior to   sinteringSpecific pressure or lack or   pressure recited	67 68 69 <b>FOREIGN</b>	material .Consolidation of powdersExtrusionIsostatic/Hydrostatic pressingRolling  ART COLLECTIONS
29 30 31 32 33 34 35 36 37 38 39	Subsequent workingSubsequent heat treatment   (e.g., annealing, etc.) .Powder pretreatment (prior to   consolidation or sintering)Heat treatment of powderMechanical blendingComminutingChemical blendingCoatingAddition of fugitive materialAdditional material is solid .Consolidation of powder prior to   sinteringSpecific pressure or lack or   pressure recitedSlip or slurry	67 68 69 <b>FOREIGN</b>	material .Consolidation of powdersExtrusionIsostatic/Hydrostatic pressingRolling  ART COLLECTIONS